

my identification observed: 'It should be remembered that the significant segment in the development of the antennae is segment 3, which divides from instar to instar producing an increasing number of segments per instar. The increase exhibits a different pattern in different species but within a species the pattern is surprisingly constant. Occasionally something goes wrong with this process producing a slightly different pattern in a particular individual, which may thus be asymmetrical if only one side is affected or symmetrical if both sides are equally influenced.' If Dr. Hincks's suggestion is correct and the asymmetry is attributable to an accidental cause, it is remarkable that it should be found in such a large proportion of the cases examined.

Similar asymmetry in the distribution of the pale antennal segments was observed in *Euborellia annulipes* (Lucas), but I have not kept a detailed record of my observations.

RESEARCH LABORATORY,
ZOOLOGY DEPARTMENT,
N. WADIA COLLEGE,
POONA 1,
July 20, 1961.

P. V. JOSHI

20. OBSERVATIONS ON THE SPIDER *LATRODECTUS HASSELLII INDICUS* SIMON WITH A NOTE ON ARACHNIDISM

(With a text-figure)

On 17 June 1961 a female spider *Latrodectus hasseltii indicus* Simon, carrying a cocoon was collected by the junior author (PWS) under a stone in open scrub country on the tableland 2000 ft. at Suriamal in north Thana, Bombay. The spider was kept alive for observation some time. To the account in Pocock's FAUNA volume on Arachnida which is restricted to the size and colour of the female (?) it may be added from observation of this specimen that the two terminal segments of all the legs of the adult female are reddish brown in colour. The following further notes may be of interest.

On the 18th, in transport and transfer to its new home in a rectangular glass jar (20.5×10×24 cm.) the spider and the cocoon were separated, the latter lying on the bottom. However, during the night the spider spun a few strands in a corner of the jar c. 10 cm. off the bottom, recovered the cocoon, and attached it to the web. She showed no further interest in it though she usually spent the day on the web quite close to the cocoon. On 22 June a second cocoon,

similar in dimensions to the first, was spun quite close to the first on the same web. The cocoons were white in colour, coarse-textured, spherical in shape, with a diameter of 10 mm.

On 9 July, 23 days after collection, young emerged from the first cocoon, and on 13 July from the 2nd cocoon, 22 days after it was spun. The spiderlings emerged through a small circular hole on the cocoon. There are instances of the mother spider of other species aiding the young by perforating the cocoon; in the present case the young emerged at night and we were unable to make any observations. The young spiders remained mainly on the web strands and on the muslin cover of the jar. The spiderlings from the two cocoons totalled 304, but it was not possible to keep separate counts.



× 2

The spiderlings differ markedly from the adult in colour and body pattern. Unlike the jet black of the adult with the patches of scarlet on the upper side of the abdomen and at the tip of the lower side of the abdomen, the young are mainly white and brown. The thorax is pale brown above and below, with a black border to the edge of the sternum; abdomen white above with four black spots arranged distally in pairs and a large pale brown proximal spot, a middle brown patch, and a distal smaller brown spot, all situated along the mid abdomen; ventrally white, with a black line along the sides, which end above the spinneret; fangs black; legs translucent brown. Size less than 1 mm. in length.

The cocoon and the colour of the young are in many respects similar to those of the American species *Latrodectus mactans*.

The adult was fed on flies and black ants (*Crematogaster* sp.), but there are records of the species feeding on much larger insects. The young were to a certain extent cannibalistic. None survived.

The genus *Latrodectus* is widely distributed, and is regarded as particularly dangerous in widely separated parts of the world: *L. menavodi* in Madagascar, *L. katepo* in New Zealand, *L. geometricus* and *L. indistinctus* in Africa, the Black Widow (*L. mactans*) in West Indies and North America, and the Karakurt or Black Wolf (*L. tredecimguttatus*) in Southern Europe.

A comprehensive article on arachnidism entitled 'The health problem of Arachnidism' by Z. Marectic and M. Stanic, based on their observation and work, clinical and otherwise, in combating an outbreak of Arachnidism in the Istrian region of Yugoslavia in the late forties and early fifties, was published in the *World Health Organization Bulletin*, 1954, **11** : 1007-1022. The notes below are compiled from that article as very little information is available on the subject in India, where only one little-known species occurs.

In south Europe, where *L. tredecimguttatus* the type species of the genus is common, there appear to be periodic fluctuations in the number of specimens seen. In some years the spiders are found in enormous numbers and then disappear for years, even decades. In Austria and Yugoslavia, it is said to be extremely common and to be collected from almost every square yard. The spider is not aggressive, biting only in self-defence. During the period 1948-53 over 180 cases, mostly among agriculturists, were treated.

The effect though serious is not usually dangerous to life. The reactions follow a set pattern. The first symptom, which appears in 10 to 20 minutes or in some cases even an hour or more later, is a burning sensation at the site of the bite followed by pain in the lymphatic nodes (axillary or inguinal). This is followed by a feeling of pressure in the chest and pain in the belly, back, and extremities, particularly the legs. Intense agonising pain is in fact the main symptom. In serious cases the patient is unable to stand erect and becomes stiff. There is increased tendon reflex, profuse sweating, sometimes shedding of tears, excessive salivation or a dry mouth, convulsion, and in some cases tetanic spasms of the jaw muscles. There is also considerable restlessness, the patient having an urge to move and walk, is convulsed and writhes. These movements, also noticed in experimental animals, give a certain amount of relief from pain, and are believed to be the origin of hysterical taranterism, from which originated the name of the Tarantella dance.

The symptoms in untreated persons last for a week and convalescence takes a month or more. There is considerable loss of weight, one patient having lost 5 kg. in 3 days. In experimental animals there is an instance of a rat having lost 20% of its weight in 24 hours.

Curiously enough the effect of the venom on different animals varies and the relative size of the animal appears to be of no importance. The poison is deadly to camels and horses (a horse injected with the macerate of a single spider died within 24 hours) but has no effect on goats! Among the smaller animals mice are highly sensitive, death following a bite in 10 to 20 minutes. Rabbits and dogs are resistant. The venom has no effect on reptiles. It is especially effective on nerve cells, and is believed to have a toxic effect 15 times greater than that of the rattlesnake. The venom is of a clear lemon-yellow colour. The Ph changes with temperature, becoming alkaline above 25° C. and consequently more toxic. It is also established that the venom of different species is practically identical and anti-venom against the bite of one species gives equal protection against allied species. The method of treatment which gave the best results was simultaneous application of anti-venom and calcium; however, injection of calcium salts alone in the absence of anti-venom would be sufficient to give relief. An intravenous injection of calcium gluconate, chlorate, or bromate gives immediate and great relief from pain. The pain may recur but these relapses run a milder course. Several injections of calcium are recommended to complete the treatment.

The bite of most species of spiders causes no more harm than momentary discomfort.

BOMBAY NATURAL HISTORY SOCIETY,
91, WALKESHWAR ROAD,
BOMBAY 6,
November 22, 1961.

J. C. DANIEL
P. W. SOMAN

21. PROTECTIVE DEVICES OF SOME ORB-WEAVING SPIDERS FROM INDIA

(With nine text-figures)

In the course of my field collections of spiders in India I have come across interesting examples of protective devices, mainly among the orb-weaving spiders. In this note I summarise some of my observations.